



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/779,736

02/18/2004

Chen Lung Kuo

08954.0014

2073

22852 7590 05/29/2008

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

CHEN, WEN YING PATTY

ART UNIT

PAPER NUMBER

2871

MAIL DATE

DELIVERY MODE

05/29/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/779,736	Applicant(s) KUO, CHEN LUNG	
	Examiner WEN-YING PATTY CHEN	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 February 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-24, 27-36, 38, 39, 41 and 42 is/are pending in the application.
- 4a) Of the above claim(s) 27-32 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-24, 33-36, 38, 39, 41 and 42 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments, filed Feb. 6, 2008, with respect to the rejection(s) of all claims under the prior art of Kishimoto et al. have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Sawasaki et al. (US 6836308) and Shimomura et al. (US 5747790).

Claims 21-24, 27-36, 38, 39, 41 and 42 remain pending in the current application and claims 27-32 are withdrawn from consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 21, 23, 33, 35, 38-39 and 41-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 2002/0075443) in view of Sawasaki et al. (US 2001/0026347) further in view of Sawasaki et al. (US 6836308; hereinafter referred to as '308) and Shimomura et al. (US 5747790).

With respect to claims 21, 33 and 38-39: Shimizu et al. disclose in Figure 6 a liquid crystal display panel, comprising:

a first substrate (element 100B) having a plurality of first areas (region where element 1b is formed) and a plurality of second areas (region where element 1c is formed), wherein a surface of the first substrate has the same height in the first areas and in the second areas;

a second substrate (element 100A) having a plurality of first areas (region where element 104 is formed) and a plurality of second areas (region wherein element 104 is not formed), wherein the first areas and the second areas are on a side of the second substrate facing the first substrate, and a surface of the second substrate is higher in the first areas than in the second areas, and the second areas of the second substrate correspond to the second areas of the first substrate;

a liquid crystal layer (element 9) sandwiched between the first substrate and the second substrate;

a plurality of first protrusions (element 1b) disposed on the first areas of the first substrate and substantially contacting the first areas of the second substrate for maintaining a first cell gap between the first and second substrates (Paragraph 0085); and

a plurality of second protrusions (element 1c) disposed on the second areas of the first substrate, tops of the second protrusions being separated from the second areas of the second

Art Unit: 2871

substrate by a predetermined distance (as shown in the figure) in such a manner that the second protrusions contact the second areas of the second substrate when the liquid crystal display panel is subjected to an external force to maintain a second cell gap between the first and second substrates, the second cell gap being smaller than the first cell gap (Paragraph 0085).

Shimizu et al. failed to disclose that a plurality of third protrusions are disposed on at least one of the first and second substrates for regulating orientation of the liquid crystal layer and that the first and second protrusions are made of a first material and the third protrusions are made of a second material, the first material being harder than the second material.

However, Sawasaki et al. disclose in Figure 48 a liquid crystal display device comprising a plurality of third protrusions (element 246a) in addition to a plurality of first protrusions and a plurality of second protrusions, disposed on at least one of the first and second substrates for regulating orientation of the liquid crystal layer. Although Sawasaki et al. further disclose in Paragraphs 0227-0228 that the first and second protrusions are formed so to act as rigid supports for the substrates and as shown in Figure 48, that the first and second projections 247 appear to be made of a different material as the third projections 246a (as shown by the different direction of the slashed lines), nonetheless, Sawasaki et al. failed to specifically disclose that the first and second projections are made of a different material than the third projection. On the other hand, '308 discloses in Column 15 lines 43-45 and Column 13 lines 47-55 that cell-gap maintaining spacers are formed of acrylic resin material and orientation-inducing protrusions are formed of novolak resist material. Furthermore, Shimomura et al. disclose in Column 13 lines 46-49 that acrylic resin has higher film hardness as compared to novolac resin. Hence, the cell-gap maintaining spacers are made of a material harder than the orientation-inducing protrusions.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Shimizu et al. wherein a plurality of third protrusions being disposed on at least one of the first and second substrates for regulating orientation of the liquid crystal layer as taught by Sawasaki et al., since Sawasaki et al. teach that by forming a plurality of third protrusions helps in providing a multi-domain display device, thereby, obtaining good display quality (Paragraphs 0016-0017) and to form the first and second protrusions of acrylic resin material and the third protrusion of novolak resist material as taught by '308, since Shimomura et al. teach that acrylic resin has a higher film hardness as compare to novolak resin, thus, the spacers would be able to provide a sufficient strength for maintaining the cell gap of the liquid crystal display.

As to claims 23 and 35: Shimizu et al. further disclose in Paragraph 0085 that the first protrusions and the second protrusions have the same height.

As to claims 41 and 42: Shimizu et al. further disclose in Figure 6 that the first substrate (element 100B) has a plurality of light-shielding matrices (element 3), the first and second protrusions (elements 1b and 1c) being disposed on the light-shielding matrices (more clearly shown in Figure 8).

Claims 22, 24, 34 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shimizu et al. (US 2002/0075443), Sawasaki et al. (US 2001/0026347), Sawasaki et al. (US 6836308; hereinafter referred to as '308) and Shimomura et al. (US 5747790) in view of Miyachi et al. (US 6211937).

With respect to claims 22 and 34: Shimizu et al., Sawasaki et al., '308 and Shimomura et al. disclose all of the limitations set forth in the previous claims and Shimizu et al. further disclose in Paragraph 0085 that the first substrate is a color filter substrate and the second substrate is a thin film transistor substrate; the liquid crystal display panel further comprising thin film transistor (TFT) devices on the second substrate.

Shimizu et al. failed to specifically disclose that the TFT devices are formed in the first areas of the second substrate wherein the first protrusions contact the TFT devices.

However, Miyachi et al. disclose in Figure 5 a liquid crystal display device comprising of TFT devices (element 1) wherein protrusions (element 5) are formed in locations contacting the TFT devices (Column 7, lines 55-56).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to construct a liquid crystal display device as taught by Shimizu et al., Sawasaki et al., '308 and Shimomura et al. wherein the first protrusions are formed in contact with the TFT devices as taught by Miyachi et al., since Miyachi et al. teach that by forming the protrusions on the TFT devices minimizes the effect of lowering the aperture ratio thus preventing a degradation of the display quality (Column 8, lines 33-39).

As to claims 24 and 36: Miyachi et al. further disclose in Column 8 line 3 that the TFT devices have a thickness of 1.6 μ m, therefore, when the first protrusions are formed contacting the TFT devices, the distance between the second protrusions with respect to the second substrate will then be 1.6 μ m, which is in the range of 1.0 μ m to 2.0 μ m.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WEN-YING PATTY CHEN whose telephone number is (571)272-8444. The examiner can normally be reached on 8:00-5:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Nelms can be reached on (571)272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

WEN-YING PATTY CHEN
Examiner
Art Unit 2871

/wpc/
5/27/08

/Andrew Schechter/
Primary Examiner, Art Unit 2871